[DOC] Systems Pharmacology And Pharmacodynamics Aaps Advances In The Pharmaceutical Sciences Series

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Systems Pharmacology and Pharmacodynamics-Donald E. Mager 2016-10-14 While systems biology and pharmacodynamics have evolved in parallel, there are significant interrelationships that can enhance drug discovery and enable optimized therapy for each patient. Systems pharmacology is the relatively new discipline that is the interface that between these two methods. This book is the first to cover the expertise from systems biology and pharmacodynamics researchers, describing how systems pharmacology may be developed and refined further to show practical applications in drug development. There is a growing awareness that pharmaceutical companies should reduce the high attrition in the pipeline due to insufficient efficacy or toxicity found in proof-of-concept and/or Phase II studies. Systems Pharmacology and Pharmacodynamics discusses the framework for integrating information obtained from understanding physiological/pathological pathways (normal body function system vs. perturbed system due to disease) and pharmacological targets in order to predict clinical efficacy and adverse events through iterations between mathematical modeling and experimentation.

Systems Pharmacology and Pharmacodynamics-Donald E. Mager 2016-11-29 While systems biology and pharmacodynamics have evolved in parallel, there are significant interrelationships that can enhance drug discovery and enable optimized therapy for each patient. Systems pharmacology is the relatively new discipline that is the interface between these two methods. This book is the first to cover the expertise from systems biology and pharmacodynamics researchers, describing how systems pharmacology may be developed and refined further to show practical applications in drug development. There is a growing awareness that pharmaceutical companies should reduce the high attrition in the pipeline due to insufficient efficacy or toxicity found in proof-of-concept and/or Phase II studies. Systems Pharmacology and Pharmacodynamics discusses the framework for integrating information obtained from understanding physiological/pathological pathways (normal body function system vs. perturbed system due to disease) and pharmacological targets in order to predict clinical efficacy and adverse events through iterations between mathematical modeling and experimentation.

Quantitative Methods in Pharmaceutical Research and Development-Olga V Marchenko 2020 This contributed volume presents an overview of concepts, methods, and applications used in several quantitative areas of drug research, development, and marketing. Chapters bring together the theories and applications of various disciplines, allowing readers to learn more about quantitative fields, and to better recognize the differences between them. Because it provides a thorough overview, this will serve as a self-contained resource for readers interested in the pharmaceutical industry, and the quantitative methods that serve as its foundation. Specific disciplines covered include: Biostatistics Pharmacometrics Genomics Bioinformatics Pharmacoepidemiology Commercial analytics Operational analytics Quantitative Methods in Pharmaceutical Research and Development is ideal for undergraduate students interested in learning about real-world applications of quantitative methods, and the potential career options open to them. It will also be of interest to experts working in these areas.--

Basic Pharmacokinetics and Pharmacodynamics-Sara E. Rosenbaum 2016-12-27 Updated with new chapters and topics, this book provides a comprehensive description of all essential topics in contemporary pharmacokinetics and pharmacodynamics. It also features interactive computer simulations for students to experiment and observe PK/PD models in action. • Presents the essentials of pharmacokinetics and pharmacodynamics in a clear and progressive manner • Helps students better appreciate important concepts and gain a greater understanding of the mechanism of action of drugs by reinforcing practical applications in both the book and the computer modules • Features interactive computer simulations, available online through a companion website at: https://web.uri.edu/pharmacy/research/rosenbaum/sims/ • Adds new chapters on physiologically based pharmacokinetic models, predicting drug-drug interactions, and pharmacogenetics while also strengthening original chapters to better prepare students for more advanced applications • Reviews of the 1st edition: “This is an ideal textbook for those starting out … and also for use as a reference book ….” (International Society for the Study of Xenobiotics) and “I could recommend Rosenbaum’s book for pharmacology students because it is written from a perspective of drug action . . . Overall, this is a well-written introduction to PK/PD …. “ (British Toxicology Society Newsletter)

ADME and Translational Pharmacokinetics / Pharmacodynamics of Therapeutic Proteins-Honghui Zhou 2015-12-02 "This book focuses on the fundamental and practical aspects of ADME and translational PK/PD for therapeutic proteins -- cutting-edge research, lessons learned from small molecules, the utility of ADME and translational PK/PD to guide lead optimization, first-in-human study dose projection and design, and clinical development and registration"--Provided by publisher.

The Emerging Discipline of Quantitative Systems Pharmacology-Tarek A. Leil 2015-09-07 In 2011, the National Institutes of Health (NIH), in collaboration with leaders from the pharmaceutical industry and the academic community, published a white paper describing the emerging discipline of Quantitative Systems Pharmacology (QSP), and recommended the establishment of NIH-supported interdisciplinary research and training programs for QSP. QSP is still in its infancy, but has tremendous potential to change the way we approach biomedical research. QSP is really the integration of two disciplines that have been increasingly useful in biomedical research; “Systems Biology” and “Quantitative Pharmacology”. Systems Biology is the field of biomedical research that seeks to understand the relationships between genes and biologically active molecules to develop qualitative models of these systems; and Quantitative Pharmacology is the field of biomedical research that seeks to use computer aided modeling and simulation to increase our understanding of the pharmacokinetics (PK) and pharmacodynamics (PD) of drugs, and to aid in the design of pre-clinical and clinical experiments. The purpose of QSP modeling is to develop quantitative computer models of biological systems and disease processes, and the effects of drug PK and PD on those systems. QSP models allow testing of numerous potential experiments “in-silico” to eliminate those associated with a low probability of success, avoiding the potential costs of evaluating all of those failed experiments in the real world. At the same time, QSP models allow us to develop our understanding of the interaction between drugs and biological systems in a more systematic and rigorous manner. As the need to be more cost-efficient in the use of research funding increases, biomedical researchers will be required to gain the maximum insight from each experiment that is conducted. This need is even more acute in the pharmaceutical industry, where there is tremendous competition to develop innovative therapies in a highly regulated environment, combined with very high research and development (R&D) costs for bringing new drugs to market (~$1.3 billion/drug). Analogous modeling & simulation approaches have been successfully integrated into other disciplines to improve the fundamental understanding of the science and to improve the efficiency of R&D (e.g., physics, engineering, economics, etc.). The biomedical research community has been slow to integrate computer aided modeling & simulation for many reasons: including the perception that biology and pharmacology are “too complex” and “too variable” to be modeled with mathematical equations; a lack of adequate graduate training programs; and the lack of support from government agencies that fund biomedical research. However, there is an active community of researchers in the pharmaceutical industry, the academic community, and government agencies that develop QSP and quantitative systems biology models and apply them both to better characterize and predict drug pharmacology and disease processes; as well as to improve efficiency and productivity in pharmaceutical R&D.

Drug Delivery to the Brain-Margareta Hammarlund-Udenaes 2013-12-03 The development of new CNS drugs is notoriously difficult. Drugs must reach CNS target sites for action and these sites are protected by a number of barriers, the most important being the blood –brain barrier (BBB). Many factors are therefore critical to consider for CNS drug delivery, e.g. active/passive transport across the BBB, intra-brain distribution, and central/systemic pharmacokinetics, to name a few. Neurological disease and trauma conditions add further complexity because CNS barriers, drug distribution and pharmacokinetics are dynamic and often changed by disease/trauma. Knowledge of all these factors and their interplay in different conditions is of utmost importance for proper CNS drug development and disease treatment. In recent years much information has become available for a better understanding of the many factors important for CNS drug delivery and how they interact to affect drug action. This book describes small and large drug delivery to the brain with an emphasis on the physiology of the BBB and the principles and concepts for drug delivery across the BBB and distribution within the brain. It contains methods descriptions for studying drug delivery, routes and approaches of administering drugs into the brain, the influence of disease, and drug industry perspectives. Therewith, it contributes to an in-depth understanding of the interplay between brain (patho)-physiology and drug characteristics. Furthermore, the content is designed to be both cutting-edge and educational, so that the book can be used in high-level training of academic and industry scientists with full references to original publications.

FDA Bioequivalence Standards-Lawrence X. Yu 2014-09-05 This comprehensive reference provides an in-depth discussion on state-of-the-art regulatory science in bioequivalence. In sixteen chapters, the volume explores a broad range of topics pertaining to bioequivalence, including its origin and principles, statistical considerations, food effect studies, conditions for waivers of bioequivalence studies, Biopharmaceutics Classification Systems, Biopharmaceutics Drug Disposition Classification System, bioequivalence modeling/simulation and best practices in bioanalysis. It also discusses bioequivalence studies with pharmacodynamic and clinical endpoints as well as bioequivalence approaches for highly variable drugs, narrow therapeutic index drugs, liposomes, locally acting gastrointestinal drug products, topical products and nasal and inhalation products. FDA Bioequivalence Standards is written by FDA regulatory scientists who develop regulatory policies and conduct regulatory assessment of bioequivalence. As such, both practical case studies and fundamental science are highlighted in these chapters. The book is a valuable resource for scientists who work in the pharmaceutical industry, regulatory agencies and academia as well as undergraduate and graduate students looking to expand their knowledge about bioequivalence standards.

Pharmaco-complexity-Anthony J. Hickey 2020-06-24 Non-linear phenomena pervade the pharmaceutical sciences. Understanding the interface between each of these phenomena and the way in which they contribute to overarching processes such as pharmaceutical product development may ultimately result in more efficient, less costly and rapid implementation. The benefit to Society is self-evident in that affordable treatments would be rapidly forthcoming. We have aggregated these phenomena into one topic “Pharmaco-complexity: Non-linear Phenomena and Drug Product Development”.

ADME Processes in Pharmaceutical Sciences-Alan Talevi 2018-11-30 Absorption, Distribution, Metabolism and Excretion (ADME) processes and their relationship with the design of dosage forms and the success of pharmacotherapy form the basis of this upper level undergraduate/graduate textbook. As an introduction oriented to pharmacy students, it is also written for scientist from different fields outside of pharmaceutics. (e.g. material scientist, material engineers, medicinal chemists) who might be working in a positions in pharmaceutical companies or whose work might benefit from basic training in the ADME concepts and some biological background. Pedagogical features such as objectives, keywords, discussion questions, summaries and case studies add valuable teaching tools. This book will provide not only general knowledge on ADME processes but also an updated insight on some hot topics such as drug transporters, multi-drug resistance related to pharmacokinetic phenomena, last generation pharmaceutical carriers (nanopharmaceuticals), in vitro and in vivo bioequivalence studies, biopharmaceutics, pharmacogenomics, drug-drug and food-drug interactions, and in silico and in vitro prediction of ADME properties. In comparison with other similar textbooks, around half of the volume would be focused on the relationship between expanding scientific fields and ADME processes. Each of these burgeoning fields has a separate chapter in the second part of the volume, and was written with leading experts on the correspondent topic, including scientists and academics from USA and UK (Duquesne University School of Pharmacy, Indiana University School of Medicine, University of Utah College of Pharmacy, University of Maryland, University of Bath). Additionally, each of the initial chapters dealing with the generalities of drug absorption, distribution, metabolism and excretion would include relevant, classic examples related to each topic with appropriate illustrations (e.g. importance of active absorption of levodopa, implications in levodopa administration, drug drug interactions and food drug interactions emerging from the active uptake; intoxication with paracetamol as a result of glutathione depletion, CYP induction and its relationship with acute liver failure caused by paracetamol, etc). ADME Processes and Pharmaceutical Sciences is written as a core textbook for ADME processes, pharmacy, pharmacokinetics, drug delivery, biopharmaceutics, drug disposition, drug design and medicinal chemistry courses.

Quantitative Pharmacology and Individualized Therapy Strategies in Development of Therapeutic Proteins for Immune-Mediated Inflammatory Diseases-Honghui Zhou 2019-03-19 Thorough Overview Identifies and Addresses Critical Gaps in the Treatment of Several Chronic Diseases With increasing numbers of patients suffering from Immune-Mediated Inflammatory Diseases (IMIDs), and with the increasing reliance on biopharmaceuticals to treat them, it is imperative that researchers and medical practitioners have a thorough understanding of the absorption, distribution, metabolism and excretion (ADME) of therapeutic proteins as well as translational pharmacokinetic/pharmacodynamic (PK/PD) modeling for them. This comprehensive volume answers that need to be addressed. Featuring eighteen chapters from world-renowned experts and opinion leaders in pharmacology, translational medicine and immunology, editors Honghui Zhou and Diane Mould have curated a much-needed collection of research on the advanced applications of pharmacometrics and systems pharmacology to the development of biotherapeutics and individualized treatment strategies for the treatment of IMIDs. Authors discuss the pathophysiology of autoimmune diseases in addition to both theoretical and practical aspects of quantitative pharmacology for therapeutic proteins, current translational medicine research methodologies and novel thinking in treatment paradigm strategies for IMIDs. Other notable features include: • Contributions from well-known authors representing leading academic research centers, specialized contract research organizations and pharmaceutical industries whose pipelines include therapeutic proteins • Chapters on a wide range of topics (e.g., pathophysiology of autoimmune diseases, biomarkers in ulcerative colitis, model-based meta-analysis use in the development of therapeutic proteins) • Case studies of applying quantitative pharmacology approaches to guiding therapeutic protein drug development in IMIDs such as psoriasis, inflammatory bowel disease, multiple sclerosis and lupus Zhou and Mould’s timely contribution to the critical study of biopharmaceuticals is a valuable resource for any academic and industry researcher working in pharmacokinetics, pharmacology, biochemistry, or biotechnology as well as the many clinicians seeking the safest and most effective treatments for patients dealing with chronic immune disorders.

Drug Discovery and Evaluation: Methods in Clinical Pharmacology-H.Gerhard Vogel 2010-12-15 Drug Discovery and Evaluation has become a more and more difficult, expensive and time-consuming process. The effect of a new compound has to be detected by in vitro and in vivo methods of pharmacology. The activity spectrum and the potency compared to existing drugs have to be determined. As these processes can be divided up stepwise we have designed a book series "Drug Discovery and Evaluation" in the form of a recommendation document. The methods to detect drug targets are described in the first volume of this series "Pharmacological Assays" comprising classical methods as well as new technologies. Before going to man, the most suitable compound has to be selected by pharmacokinetic studies and experiments in toxicology. These preclinical methods are described in the second volume „Safety and Pharmacokinetic Assays". Only then are first studies in human beings allowed. Special rules are established for Phase I studies. Clinical pharmacokinetics are performed in parallel with human studies on tolerability and therapeutic effects. Special studies according to various populations and different therapeutic indications are necessary. These items are covered in the third volume: „Methods in Clinical Pharmacology".

Physiologically-Based Pharmacokinetic (PBPK) Modeling and Simulations-Sheila Annie Peters 2021-10-05 Physiologically Based Pharmacokinetic (PBPK) Modeling and Simulations The first book dedicated to the emerging field of physiologically based pharmacokinetic modeling (PBPK) Now in its second edition, Physiologically Based Pharmacokinetic (PBPK) Modelling and Simulations: Principles, Methods, and Applications in the Pharma Industry remains the premier reference book throughout the rapidly growing PBPK user community. Using clear and concise language, author Sheila Annie Peters connects theory with practice as she explores the vast potential of PBPK modeling for improving drug discovery and development. This fully updated new edition covers key developments in the field of PBPK modelling and simulations that have emerged in recent years. A brand-new section provides case studies in different application areas of PBPK modelling, including drug-drug interaction, genetic polymorphism, renal impairment, and pediatric extrapolation. Additional chapters address topics such as model-informed drug development (MIDD) and expose readers to a wide range of current applications in the field. Throughout the book, substantially revised chapters simplify complex topics and offer a balanced view of both the opportunities and challenges of PBPK modelling. Providing timely and comprehensive coverage of one of the most exciting new areas of pharmaceutical science, this book: Describes the principles behind physiological modeling of pharmacokinetic processes, inter-individual variability, and drug interactions for small molecule drugs and biologics Features a wealth of new figures and case studies of the applications of PBPK modelling along the value chain in drug discovery and development Reflects the latest regulatory guidelines on the reporting of PBPK modelling analysis Includes access to a new companion website containing code, datasets, explanations of case examples in the text, and discussion of key developments in the field Contains a brief overview of the field, end-of-chapter keywords for easy reference, and an extensive bibliography Physiologically Based Pharmacokinetic (PBPK) Modeling and Simulations: Principles, Methods, and Applications in the Pharmaceutical Industry, Second Edition is an indispensable single-volume resource for beginning and intermediate practitioners across the pharmaceutical sciences in both industry and academia.

Attrition in the Pharmaceutical Industry-Alex 2015-12-29 With a focus on case studies of R&D programs in a variety of disease areas, the book highlights fundamental productivity issues the pharmaceutical industry has been facing and explores potential ways of improving research effectiveness and efficiency. Takes a comprehensive and holistic approach to the problems and potential solutions to drug compound attrition Tackles a problem that adds billions of dollars to drug development programs and health care costs Guides discovery and development scientists through R&D stages, teaching requirements and reasons why drugs can fail Discusses potential ways forward utilizing new approaches and opportunities to reduce attrition

Therapeutics—Advances in Research and Application: 2012 Edition- 2012-12-26 Therapeutics—Advances in Research and Application: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Therapeutics. The editors have built Therapeutics—Advances in Research and Application: 2012 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Therapeutics in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Therapeutics—Advances in Research and Application: 2012 Edition has been produced by the world’s leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

Micro and Nano Flow Systems for Bioanalysis-Michael W. Collins 2012-12-13 Micro and Nano Flow Systems for Bioanalysis addresses the latest developments in biomedical engineering at very small scales. It shows how organic systems require multi-scale understanding in the broadest sensewhether the approach is experimental or mathematical, and whether the physiological state is healthy or diseased. Micro-and nano-fluidics represent key areas of translational research in which state-of-the-art engineering processes and devices are applied to bedside monitoring and treatment. By applying conventional micro- and nano-engineering to complex organic solids, fluids, and their interactions, leading researchers from throughout the world describe methods and techniques with great potential for use in medicine and clinical practice. Coverage includes the seeming plethora of new, fine-scale optical methods for measuring blood flow as well as endothelial activation and interaction with tissue. Generic areas of modeling and bioelectronics are also considered. In keeping with the recurring theme of medicine and clinical practice, approximately half of the chapters focus on the specific application of micro- and nano- flow systems to the understanding and treatment of cancer and cardiovascular diseases. This book developed from an Expert Overview Session on "Micro & Nano Flows in Medicine: the way ahead" at the 3rd Micro and Nano Flows Conference (MNF2011) held in Thessaloniki, Greece. Additional chapters were included to enhance the international, state-of-the-art coverage.

Computational and Experimental Approaches in Multi-target Pharmacology-Thomas J. Anastasio 2017-08-24 The next frontier in pharmacology is the development of multi-target strategies in which pathological processes are controlled by pharmacologically manipulating them at many different points at once. Designing multi-target strategies will require deep understanding of the complex physiology that underlies pathological processes. It will also require the development of single drugs with multiple targets, or combinations of drugs with compatible pharmacokinetics that work synergistically to maximize desirable effects while minimizing unwanted side effects. This e-Book contains ten original articles, each addressing a different aspect of this challenge. Together they open new perspectives and show the way forward in the development of multi-target therapeutics.

Pharmacokinetics and Pharmacodynamics of Pre-Exposure Prophylaxis Against HIV-Max Von Kleist 2020-10-27

Pharmacokinetics and Pharmacodynamics of Antimalarial Drugs Used in Combination Therapy-Qigui Li 2015-06-04 Malaria takes a great toll on human health and well-being, particularly in tropical regions including Sub-Saharan Africa, Southeast Asia, Oceania and parts of the Americas. In recent years, some Plasmodium strains have become increasingly resistant to all classes of conventional antimalarial drugs currently in use. Researchers have, therefore, stepped up efforts to revise atimalarial drug policies, develop new drugs, and implement new strategies to combat this disease. In order to prevent widespread resistance, antimalarial combination therapies (ACTs) have been deployed and a World Antimalarial Resistance Network has been established as a means of anitimalarial drug resistance surveillance. Artemisinin-based combination therapies have proven to be useful as a replacement for standard regimens. Currently, these ACTs successfully cure patients suffering from uncomplicated malaria with superior efficacy and lower toxicity, but there remains a huge challenge (high mortality rate) associated with treatment of severe malaria. Studies of drug disposition and drug efficacy (PK/PD evaluations) are essential to understanding why drugs work as antimalarials as they illustrate issues with drug resistance, drug safety and drug toxicity that are critical to finding the appropriate drug dose for patients. This eBook illustrates how currently available combination antimalarial drugs can be optimized for effective malaria treatment. Chapters in this book explain methods to select combination drugs based on PK/PD evaluations followed by methods o reduce drug toxicity based on these evaluations. The book also summarizes efforts that are being made by the research community to improve ACT. It is, therefore, a handy reference for medical professionals and pharmacologists working on antimalarial drugs.

Taxoids: Advances in Research and Application: 2011 Edition- 2012-01-09 Taxoids: Advances in Research and Application: 2011 Edition is a ScholarlyBrief™ that delivers timely, authoritative, comprehensive, and specialized information about Taxoids in a concise format. The editors have built Taxoids: Advances in Research and Application: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Taxoids in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Taxoids: Advances in Research and Application: 2011 Edition has been produced by the world’s leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

Applications of Microdialysis in Pharmaceutical Science-Tung-Hu Tsai 2011-07-13 Discover new and emerging applications for microdialysis in drug evaluation Microdialysis is a highly valuable sampling tool that can be used in vivo to measure free, unbound analyte concentrations located in interstitial and extracellular spaces. This book explores the full range of clinical applications for microdialysis, focusing on its use in different organ and tissue systems for pharmacokinetic and pharmacodynamic studies. Readers gain a full understanding of the underlying science of microdialysis, current techniques and practices, as well as its many applications in pharmaceutical research. Applications of Microdialysis in Pharmaceutical Science starts with an introduction to basic principles and then covers analytical considerations, pharmacodynamic and pharmacokinetic studies, clinical aspects, and special applications. Topics include: Role of microdialysis in drug development, including crucial sampling considerations and applications for nervous system diseases Continuous measurement of glucose concentrations in diabetics Applications for clinical evaluation and basic research on organ systems, including monitoring exogenous and endogenous compounds in the lungs Pharmacokinetic and pharmacodynamic evaluation of anticancer drugs Comparison of microdialysis with imaging approaches to evaluate in vivo drug distribution Special applications of microdialysis in studies of cell culture assays, drug-drug interactions, and environmental monitoring Throughout the book, readers will find simple models that clarify complex concepts and easy-to-follow examples that guide them through key applications in pharmaceutical research. In short, this book enables pharmaceutical researchers to take full advantage of microdialysis techniques for the preclinical and clinical evaluation of drugs and much more.

Drug Delivery to the Brain-Margareta Hammarlund-Udenaes 2013-12-17 The development of new CNS drugs is notoriously difficult. Drugs must reach CNS target sites for action and these sites are protected by a number of barriers, the most important being the blood –brain barrier (BBB). Many factors are therefore critical to consider for CNS drug delivery, e.g. active/passive transport across the BBB, intra-brain distribution, and central/systemic pharmacokinetics, to name a few. Neurological disease and trauma conditions add further complexity because CNS barriers, drug distribution and pharmacokinetics are dynamic and often changed by disease/trauma. Knowledge of all these factors and their interplay in different conditions is of utmost importance for proper CNS drug development and disease treatment. In recent years much information has become available for a better understanding of the many factors important for CNS drug delivery and how they interact to affect drug action. This book describes small and large drug delivery to the brain with an emphasis on the physiology of the BBB and the principles and concepts for drug delivery across the BBB and distribution within the brain. It contains methods descriptions for studying drug delivery, routes and approaches of administering drugs into the brain, the influence of disease, and drug industry perspectives. Therewith, it contributes to an in-depth understanding of the interplay between brain (patho)-physiology and drug characteristics. Furthermore, the content is designed to be both cutting-edge and educational, so that the book can be used in high-level training of academic and industry scientists with full references to original publications.

Handbook of Microdialysis- 2007-02-02 Microdialysis is currently one of the most important in vivo sampling methods in physiology and pharmacology. It is used to determine the chemical components of the fluid in the extracellular space of tissues. The technique is now well established in neuroscience research and is used excessively in behavioral neuroscience to determine the concentrations and identities of molecules in brain tissues, and their change due to behavior, hormonal and transmitter changes in the nervous system. The book provides a detailed comprehensive overview of the technology and its applications, including application in pathology, drug development, and the application in the clinic. The authors are all well known researchers in Neuroscience and experts in the use of Microdialysis. Organized into two parts of seven sections, the Handbook of Microdialysis critically examines recent developments in the field through a variety of chapters written by an internationally acclaimed group of authors. It is the first comprehensive handbook covering the technology of Microdialysis and its applications in Neuroscience. * Presents microdialysis methods and interpretation including the technical aspects of microdialysis as a sampling technique followed by the analytical chemical methods * Discusses the role of microdialysis in pharmacology, drug development and models of CNS pathology * Includes clinical applications of microdialysis

Remington-David B. Troy 2006 For over 100 years, Remington has been the definitive textbook and reference on the science and practice of pharmacy. This Twenty-First Edition keeps pace with recent changes in the pharmacy curriculum and professional pharmacy practice. More than 95 new contributors and 5 new section editors provide fresh perspectives on the field. New chapters include pharmacogenomics, application of ethical principles to practice dilemmas, technology and automation, professional communication, medication errors, re-engineering pharmacy practice, management of special risk medicines, specialization in pharmacy practice, disease state management, emergency patient care, and wound care. Purchasers of this textbook are entitled to a new, fully indexed Bonus CD-ROM, affording instant access to the full content of Remington in a convenient and portable format.

Dynamic Process Modeling- 2013-10-02 Inspired by the leading authority in the field, the Centre for Process Systems Engineering at Imperial College London, this book includes theoretical developments, algorithms, methodologies and tools in process systems engineering and applications from the chemical, energy, molecular, biomedical and other areas. It spans a whole range of length scales seen in manufacturing industries, from molecular and nanoscale phenomena to enterprise-wide optimization and control. As such, this will appeal to a broad readership, since the topic applies not only to all technical processes but also due to the interdisciplinary expertise required to solve the challenge. The ultimate reference work for years to come.

New Approaches to Drug Discovery-Ulrich Nielsch 2016-03-30 This volume gives an overview of state of the art technologies and future developments in the field of preclinical pharmaceutical research. A balanced mix of experts from academia and industry give insight in selected new developments in the drug discovery pathway. The topics cover the different parts of the drug discovery process, starting with new developments in the target identification and validation area. The lead generation part as a next step focuses on the requirements and technologies to identify new small molecules as lead compounds for further optimization; in a second section the technologies to identify biologics as leads are addressed.

The final part focuses on the pharmacological models and technologies to characterize new compounds and the impact of biomarkers to facilitate the transfer of drug candidates into the development phase.

Topical Drug Bioavailability, Bioequivalence, and Penetration-Vinod P. Shah 2013-06-29 This volume presents the state-of-the-art of measuring percutaneous penetration and determining biological relevance in dermal and transdermal drug delivery. Both in vivo and in vitro models and methods are discussed in detail to provide pharmaceutical drug developers with an invaluable guide and reference.

Developing Solid Oral Dosage Forms-Yihong Qiu 2009-03-10 Developing Solid Oral Dosage Forms is intended for pharmaceutical professionals engaged in research and development of oral dosage forms. It covers essential principles of physical pharmacy, biopharmaceutics and industrial pharmacy as well as various aspects of state-of-the-art techniques and approaches in pharmaceutical sciences and technologies along with examples and/or case studies in product development. The objective of this book is to offer updated (or current) knowledge and skills required for rational oral product design and development. The specific goals are to provide readers with: Basics of modern theories of physical pharmacy, biopharmaceutics and industrial pharmacy and their applications throughout the entire process of research and development of oral dosage forms Tools and approaches of preformulation investigation, formulation/process design, characterization and scale-up in pharmaceutical sciences and technologies New developments, challenges, trends, opportunities, intellectual property issues and regulations in solid product development The first book (ever) that provides comprehensive and in-depth coverage of what's required for developing high quality pharmaceutical products to meet international standards It covers a broad scope of topics that encompass the entire spectrum of solid dosage form development for the global market, including the most updated science and technologies, practice, applications, regulation, intellectual property protection and new development trends with case studies in every chapter A strong team of more than 50 well-established authors/co-authors of diverse background, knowledge, skills and experience from industry, academia and regulatory agencies

Pharmacokinetic-Pharmacodynamic Modeling and Simulation-Peter L. Bonate 2011-07-01 This is a second edition to the original published by Springer in 2006. The comprehensive volume takes a textbook approach systematically developing the field by starting from linear models and then moving up to generalized linear and non-linear mixed effects models. Since the first edition was published the field has grown considerably in terms of maturity and technicality. The second edition of the book therefore considerably expands with the addition of three new chapters relating to Bayesian models, Generalized linear and nonlinear mixed effects models, and Principles of simulation. In addition, many of the other chapters have been expanded and updated.

UCSF Pharmacy Alumni Association Newsletter- 2005

Systems Biology in Drug Discovery and Development-Daniel L. Young 2011-10-18 The first book to focus on comprehensive systems biology as applied to drug discovery and development Drawing on real-life examples, Systems Biology in Drug Discovery and Development presents practical applications of systems biology to the multiple phases of drug discovery and development. This book explains how the integration of knowledge from multiple sources, and the models that best represent that integration, inform the drug research processes that are most relevant to the pharmaceutical and biotechnology industries. The first book to focus on comprehensive systems biology and its applications in drug discovery and development, it offers comprehensive and multidisciplinary coverage of all phases of discovery and design, including target identification and validation, lead identification and optimization, and clinical trial design and execution, as well as the complementary systems approaches that make these processes more efficient. It also provides models for applying systems biology to pharmacokinetics, pharmacodynamics, and candidate biomarker identification. Introducing and explaining key methods and technical approaches to the use of comprehensive systems biology on drug development, the book addresses the challenges currently facing the pharmaceutical industry. As a result, it is essential reading for pharmaceutical and biotech scientists, pharmacologists, computational modelers, bioinformaticians, and graduate students in systems biology, pharmaceutical science, and other related fields.

Frontiers in Clinical Drug Research - Anti-Cancer Agents-Atta-ur-Rahman 2015-07-09 Frontiers in Clinical Drug Research - Anti-Cancer Agents should prove to be a valuable resource for pharmaceutical scientists and postgraduate students seeking updated and critical information for developing clinical trials and devising research plans in the field. The chapters featured in each volume are written by leading experts in oncology and clinical pharmacology. The eBook series is essential reading for all scientists involved in clinical drug research who wish to keep abreast of rapid and important developments in the development of anti-cancer agents. The contents of this volume include reviews on dendrimers for anti-cancer drug delivery, treatment methods for advanced cutaneous squamous cell carcinoma, targeting heat shock proteins for cancer treatment, Bayesian systems for optimizing treatment protocols in oncology and much more.

Early Drug Development, 2 Volume Set-Fabrizio Giordanetto 2018-12-10 This one-stop reference systematically covers key aspects in early drug development that are directly relevant to the discovery phase and are required for first-in-human studies. Its broad scope brings together critical knowledge from many disciplines, ranging from process technology to pharmacology to intellectual property issues. After introducing the overall early development workflow, the critical steps of early drug development are described in a sequential and enabling order: the availability of the drug substance and that of the drug product, the prediction of pharmacokinetics and -dynamics, as well as that of drug safety. The final section focuses on intellectual property aspects during early clinical development. The emphasis throughout is on recent case studies to exemplify salient points, resulting in an abundance of practice-oriented information that is usually not available from other sources. Aimed at medicinal chemists in industry as well as academia, this invaluable reference enables readers to understand and navigate the challenges in developing clinical candidate molecules that can be successfully used in phase one clinical trials.

Pharmacology - Volume I-Harry Majewski 2009-10-29 Pharmacology is a component of Encyclopedia of Biological, Physiological and Health Sciences in the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty one Encyclopedias. Pharmacology is the study of the actions of chemicals on the body and most usually it is defined as chemicals that can have a therapeutic action to treat disease. Since it looks at the interaction between chemicals and body systems pharmacology utilizes the basic disciplines of chemistry, biochemistry, physiology, pathology and microbiology in its practice. Pharmacology is a foundation science for pharmacy which is the rational prescribing of drugs to treat disease and the foundation science for toxicology which is the study of the toxic actions of chemicals on the body. The two volumes are organized in groups of chapters as follows: The first group of chapters discuss pharmacological principles and these include chapters on Pharmacodynamics; Pharmacokinetics, Neuropharmacology, Autonomic Pharmacology and Clinical Pharmacology. The second group of chapters discusses the processes of Drug discovery and the Safety requirements for drugs to be used therapeutically and include Drug Discovery and Safety Pharmacology assessment. The largest group of chapters discuss different therapeutic areas and include Cardiovascular and renal pharmacology; Endocrine pharmacology; Neuropsychopharmacology; Pulmonary Pharmacology; Gastrointestinal pharmacology; Poisons venoms and toxins; Drugs on skeletal muscle; the Pharmacotherapy of inflammation; Reproductive pharmacology; Pain pharmacology and analgesia. The final group of chapters discuss new approaches and include Pharmacogenetics and pharmacogenomics; Immunopharmacology and Gene therapy. These two volumes are aimed at the following a wide spectrum of audiences from the merely curious to those seeking in-depth knowledge: University and College students Educators, Professional practitioners, Research personnel and Policy analysts, managers, and decision makers and NGOs.

Biopharmaceuticals—Advances in Research and Application: 2012 Edition- 2012-12-26 Biopharmaceuticals—Advances in Research and Application: 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Biopharmaceuticals. The editors have built Biopharmaceuticals—Advances in Research and Application: 2012 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Biopharmaceuticals in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Biopharmaceuticals—Advances in Research and Application: 2012 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

Bioequivalence Requirements in Various Global Jurisdictions-Isadore Kanfer 2017-12-05 Although the Bioequivalence (BE) requirements in many global jurisdictions have much in common, differences in certain approaches and requirements such as definitions and terms, choice of comparator (reference) product, acceptance criteria, fasted and fed studies, single and multi-dose studies, biowaivers and products not intended for absorption into the systemic circulation (locally acting medicines and dosage forms), amongst others, provide food for thought that standardisation should be a high priority objective in order to result in a harmonized international process for the market approval of products using BE. An important objective of Bioequivalence Requirements in Various Global Jurisdictions is to attempt to gather the various BE requirements used in different global jurisdictions to provide a single source of relevant information. This information from, Brazil, Canada, China, European Union, India, Japan, MENA, Russia South Africa, the USA and WHO will be of value to drug manufacturers, regulatory agencies, pharmaceutical scientists and related health organizations and governments around the world in the quest to harmonize regulatory requirements for the market approval of generic products.

Microdialysis in Drug Development-Markus M Ller 2012-09-11 In vivo target site concentrations are probably the most important determinant of drug effects. Traditionally, linking drug concentrations to drug effects has been accomplished by modelling blood-derived data, mostly because a direct quantification of tissue concentrations has been beyond technical reach. Today, a direct measurement of target site concentrations is possible by employing microdialysis or complementary approaches such as imaging technologies. Microdialysis, initially conceived in the 1970ies, has become a standard tool in drug development. This comprehensive overview of current microdialysis technology covers general and disease-specific aspects of microdialysis by international experts in the field. It provides useful information for colleagues in academia and industry who are interested PK-PD aspects of drug development.

Applied Pharmacometrics-Stephan Schmidt 2014-12-01 This comprehensive volume provides an update on the current state of pharmacometrics in drug development. It consists of nineteen chapters all written by leading scientists from the pharmaceutical industry, regulatory agencies and academia. After an introduction of the basic pharmacokinetic and pharmacodynamic concepts of pharmacometrics in drug development, the book presents numerous examples of specific applications that utilize pharmacometrics with modeling and simulations over a variety of therapeutic areas, including pediatrics, diabetes, obesity, infections, psychiatrics, Alzheimer's disease, and dermatology, among others. The examples illustrate how results from all phases of drug development can be integrated in a more timely and cost-effective process. Applying pharmacometric decision tools during drug development can allow objective, data-based decision making. At the same time, the process can identify redundant or unnecessary experiments as well as some costly clinical trials that can be avoided. In addition to cost saving by expedited development of successful drug candidates, pharmacometrics has an important economic impact in drug product selection. Unsuccessful drug candidates can be identified early and discontinued without expending efforts required for additional studies and allocating limited resources. Hence, pharmacometric modeling and simulation has become a powerful tool to bring new and better medications to the patient at a faster pace and with greater probability of success.

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